

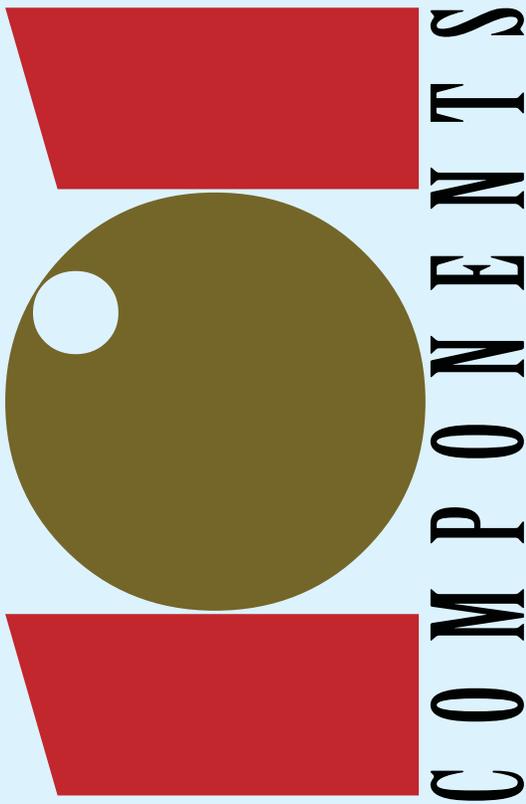
# electronic design

The Authority  
on Emerging  
Technologies for  
Design Solutions

05.21.09  
electronicdesign.com

# 101 COMPONENTS

 **Pioneer<sup>®</sup>  
Magnetics**  
POWER WITH INTELLECT



COMPONENTS

THE  
TOP 101  
COMPONENTS  
TAKE CENTER  
STAGE

When designers create new devices, they need info about the latest electronic components to hit the market. One of the ways to gather this information is via *Products of the Week*.

This e-newsletter is sent to more than 60,000 subscribers each Monday and covers innovative new products and technologies in the semiconductor, components and assemblies, boards and modules, and design, assembly, and test sectors, with direct links to the manufacturers' datasheets or product information. All of the products that appear in it are carefully selected by the *Electronic Design* editorial staff.

The products in the Components & Assemblies section of the newsletter comprise the workhorse devices of electronic designs, such as LEDs, pushbutton switches, connectors, resistors, motors, and pressure sensors. These releases are by far the most diverse in the industry and are indispensable to designers.

We compiled a list of the components in our newsletters that generated the most interest, via clicks on their links, for approximately the past 12 months (see "Choosing The Top 101" at [www.electronicdesign.com](http://www.electronicdesign.com), *ED Online 21162*). You can find the complete list of 101 products plus the top 10 power sources and sensors & transducers in the tables that follow. For now, we'll turn the spotlight on the top 10 overall.

#### POWER TO THE (DESIGNER) PEOPLE

The top two spots on the list are products that fit into a category we call Power Sources. Although both products fit the bill, they couldn't be more different.

The number one product on the list is a 30-kW ac-dc power supply from **Pioneer Magnetics**. The PM37223-10P PFC is a liquid-cooled rack-mount supply that supplies 360 V at 30 kW (*Fig. 1*). It fits within a 2U 19-in. rack configuration and is available in air-cooled versions and with a wide range of output voltages. The efficiency of the supply is greater than 92% at 80% of load. Input voltage ranges from 408 to 528 V ac with a power factor correction (PFC) of greater than 0.95 at full load.

Contrast this supply with the power source that took second honors, the 600-mA EP5368QI from Enpiron. This synchronous buck dc-dc converter targets low-power mobile designs (*Fig. 2*). It relies on a high level of integration that localizes

Industry innovation is on display as our editors and readers select the best products of the past year.

high-frequency noise associated with switch-mode converters. The device also employs voltage-mode control to achieve high noise immunity and reliable load matching to current sub-90-nm semiconductor process technologies.

Measuring 3 by 3 by 1.1 mm in a quad flat no-lead (QFN) package with an integrated inductor, a complete design requires just two tiny multilayer ceramic capacitors (MLCCs). The converter employs a 4-MHz switching frequency and achieves up to 94% efficiency. It delivers 600 mA of continuous output current over an industrial temperature range and 700 mA over the commercial temperature range. Pricing is \$0.98 each/10,000.

### IT'S COOL TO BE COOL

One of the items on the top 10 list is somewhat of a surprise, since it comes from the Cooling Products category, which usually doesn't garner many clicks. But the latest range of flat heat pipes from Gelmeck UK seems to have struck a chord with designers. The new device promises fast removal of heat up to 310 W directly from the source and transfer to the chassis or an external heatsink (Fig. 3).

Housed in an aluminum package measuring 1.2 to 2.5 mm thick, the component can eliminate the fan, heatsink, and thermal pad in many applications. As you might guess, this translates into reductions in power consumption, noise output, product thickness, and cost. Typical applications include cooling LCD and plasma displays, LED lighting, CPUs, memory components, and hard-disk drives.

### DISPLAYS & INDICATORS GET THE PICTURE

The Displays and Indicators category took four of the top 10 spots, with two displays and two indicators, better known as LEDs. This isn't surprising. On the one hand, electronic displays appear almost everywhere, and the technologies behind them are constantly evolving. On the other hand, LEDs are probably the hottest devices in the components area and today go well beyond their mundane "indicator" jobs into full-scale lighting applications that are part of the greening of America.

Engineers have a high interest in LEDs simply because there are so many innovative ways to use them. Take our fourth place finisher, the Ostar headlamp LED from Osram Opto Semiconductors. Employing an integral shutter, this LED unit promises to simplify automotive headlamp optical systems by emitting a highly efficient and clearly defined light beam without the need for external shutters (Fig. 4).

The LED is available in one-, two-, three-, four-, or five-chip arrays, allowing designers to create different illumination patterns for virtually any headlamp design. A glass cover bonded to the frame protects the chips and helps prevent scatter losses. With a 12-W rating, the headlamp produces between 125 lumens at 700 mA (one chip) and 1000 lumens at 1 A (five chips). Additionally, with a street-legal color temperature of 6000 Kelvin, the LEDs emit light nearly identical to natural daylight. As an additional bonus, the headlamp specifies a lifespan of 10,000 to 20,000 hours.

1. This year's top product is the PM37223-10P, a 30-kW ac-dc power supply from **Pioneer Magnetics**.

2. The EP5368QI synchronous buck dc-dc converter from Enpiron targets low-power mobile designs.

3. Flat heat pipes from Gelmeck UK remove up to 310 W of heat from a source and transfer it to the chassis or an external heatsink.

4. The Ostar headlamp LED from Osram Opto Semiconductors promises to simplify automotive headlamp optical systems.

5. The ASMT-MT00 from Avago Technologies is the company's first 3-W Moonstone red, green, and blue LED.

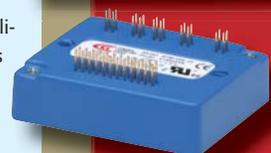
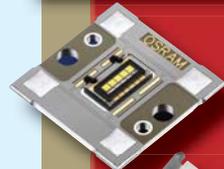
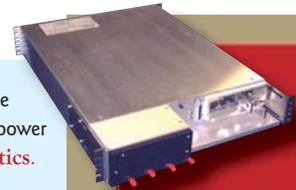
6. The 3.5-in. OSD35GN827 diagonal transmissive QVGA TFT-LCD from OSD Displays has an integrated touchscreen.

7. The AZOLED034A/43A wide-screen-format OLED displays from AZ Displays combine a bare OLED panel and integrated video decoder board.

8. The Bantam 500W torque amplifier from Copley Controls controls the torque of brushless and brush motors.

9. The C-SX-069 Pathfinder 75-Ω BNC connector from Cambridge Electronic Industries integrates a unique light-pipe feature that makes port identification easy.

10. The Model 9732-UAV from New Avionics is the first in-flight ice sensor made entirely of plastic.



Rank	Product	Company
1	PM37223-10P PFC 30-kW ac-dc power supply	<b>PIONEER MAGNETICS INC.</b>
2	EP5368QI 600-mA dc-dc converter	ENPIRION INC.
3	Flat heat pipes	GELMEC UK
4	Ostar headlamp LED	OSRAM OPTO SEMICONDUCTORS
5	Moonstone ASMT-MT00 3-W RGB LED	AVAGO TECHNOLOGIES
6	Bantam 500W torque amplifier	COPELY CONTROLS CORP.
7	C-SX-069 Pathfinder 75-Ω BNC connector	CAMBRIDGE ELECTRONIC INDUSTRIES LTD.
8	Model 9732-UAV ice detecting transducer probe	NEW AVIONICS CORP
9	OSD35GN827A 3.5-in. QVGA TFT-LCD	OSD DISPLAYS
10	AZOLED034A 3.4-in. and AZOLED043A 4.3-in. OLED displays	AZ DISPLAYS INC.
11	Moonstone ASMT-Mx00 1-W LED	AVAGO TECHNOLOGIES
12	UFE2000 1U programmable power supply	EMERSON NETWORK POWER
13	NL8048BC19-02 7-in. AS-TFT LCD	NEC ELECTRONICS AMERICA INC.
14	AST20HA digitally compensated pressure transducer	AMERICAN SENSOR TECHNOLOGIES INC.
15	Family of linear voice coil actuators	BEI KIMCO MAGNETICS
16	RV-3029-C2 and RV-3049-C2 real-time clocks	MICRO CRYSTAL
17	SmartSwitch and SmartDisplay switches	NKK SWITCHES
18	PQ-28 power-conditioning module	CALEX MFG. CO. INC.
19	G3 gas-filled dual-electrode arrester	EPCOS INC.
20	RCS and APEX high-power connectors	FCI USA INC.
21	SIT800x family of programmable oscillators	SITIME CORP.
22	R series EMI filters	TDK-LAMBDA
23	Ceramos and Oslux LED flashes	OSRAM OPTO SEMICONDUCTORS
24	Veronex handheld case family	VERO TECHNOLOGIES LTD.
25	CL1200 series pushbutton switch	CIT RELAY & SWITCH
26	Ceramos reflector LED backlight	OSRAM OPTO SEMICONDUCTORS
27	iPedal brake-testing sensor	LOADSTAR SENSORS INC.
28	SFS14K385E2 varistor	EPCOS INC.
29	LPS103-M high-efficiency power supply	EMERSON NETWORK POWER
30	Hybrid pin-fin heatsinks	COOL INNOVATIONS INC.
31	E400/500/700/800/900/1200/1600 series dc-dc converters	ENDICOTT RESEARCH GROUP INC.
32	VIB0101THJ BCM 48- to 12-V bus converter	VICOR CORP.
33	LED assemblies and arrays	ELMA ELECTRONIC INC.
34	Model 151DT01 thumbwheel control	ELOBAU SENSOR TECHNOLOGY INC.
35	MS5536 pressure sensor	SERVOFLO CORP.
36	HA55 series power inductor	BI TECHNOLOGIES
37	A100RU series 1.5-W dc-dc converters	MICROPOWER DIRECT
38	FlexBeam tool-less copper flex interposer	MOLEX INC.
39	LDA31H and ANC series standardized antennas	MURATA ELECTRONICS NORTH AMERICA INC.
40	Senso-Case series hand-controller enclosures	OKW ENCLOSURES INC.
41	RSE 1500 series rotary RVDI position sensors	MACRO SENSORS
42	MTC600 series MicroTCA power modules	EMERSON NETWORK POWER
43	STRADA mezzanine connectors	TYCO ELECTRONICS
44	TP-104/105/106 color-coded test points	COMPONENTS CORP.
45	DC fans	ORION FANS
46	MPM-15CM series 15-W switching power supplies	MICROPOWER DIRECT
47	Multipulse SIDAC Series thyristors	LITTELFUSE INC.
48	8-in. color TFT LCDs	EARTHLCD
49	LP11 series illuminated pushbutton switches	E-SWITCH INC.
50	SPIIPlus-LF four-axis motion controller	ACS MOTION CONTROL

In fifth is an RGB LED, the ASMT-MT00 (Fig. 5). It is Avago Technologies' first 3-W Moonstone red, green, and blue LED for solid-state architectural and commercial lighting applications. The component delivers 108 lumens and is independently controllable to enable color-changing and mixing capabilities. It employs three separate power LED chips and features a 120° viewing angle. Each chip accommodates a drive current of 350 mA, and the entire package can pre-mix red, green, and blue in the reflector cavity to produce a uniform white output. Price is \$7.90 each/1000.

The OSD35GN827, an LCD from OSD Displays, took ninth place and piqued the interest of our readers, no doubt, because of its integrated touchscreen (Fig. 6). The display itself is a 3.5-in. diagonal transmissive QVGA TFT-LCD targeting low-cost consumer and industrial applications. A high-performance long-life white LED backlight gives the display an initial typical brightness of 240 cd/m<sup>2</sup>.

With the backlight on, the contrast ratio is 350:1. The module integrates LCD control functions using chip-on-glass (COG) technology. The COG controller supports a 24-bit SYNC mode TTL interface that delivers up to 16.7 million colors. Pricing is \$15 each/10,000.

Tenth on the list is an example one of the newer technologies in the display industry, the OLED. The AZOLED034A 3.4-in. and AZOLED043A 4.3-in. widescreen-format OLED displays from AZ Displays combine a bare OLED panel and an integrated video decoder board (Fig. 7). The decoder board lets users display content with plug-and-play ease via a composite video input, computer VGA input, or both. Both displays can display high-quality color graphics and full-motion video without a backlight.

### MOTORING INTO THE TOP 10

You don't see torque amplifiers very often, though they're of high interest. The Bantam 500W from Copley Controls Corp., number six on our list, is used for torque control of brushless and brush motors and sports a profile of 3.8 square inches (Fig. 8). Available in two current ratings, the module

POWER SOURCES		
Rank	Product	Company
1	PM37223-10P PFC 30-kW ac-dc power supply	<b>PIONEER MAGNETICS INC.</b>
2	EP5368QI 600-mA dc-dc converter	ENPIRION INC.
3	UFE2000 1U programmable power supply	EMERSON NETWORK POWER
4	PQ-28 power-conditioning module	CALEX MFG. CO. INC.
5	LPS103-M high-efficiency power supply	EMERSON NETWORK POWER
6	E400/500/700/800/900/1200/1600 series dc-dc converters	ENDICOTT RESEARCH GROUP INC.
7	VIB0101THJ BCM 48- to 12-V bus converter	VICOR CORP.
8	A100RU series 1.5-W dc-dc converters	MICROPOWER DIRECT
9	MTC600 series MicroTCA power modules	EMERSON NETWORK POWER
10	MPM-15CM series 15-W switching power supplies	MICROPOWER DIRECT

Rank	Product	Company
51	DP Master disconnect switch	COLE HERSEE CO.
52	SFH7740 and SFH7741 SMT proximity sensors	OSRAM OPTO SEMICONDUCTORS
53	APD 19-way circular connector	ITT INDUSTRIES, CANNON
54	Alpha Instruments pressure sensors	SERVOFLO CORP.
55	30-A barrier-strip terminal block	SPECTRUM CONTROL INC.
56	LP 750 series frictionless position sensors	MACRO SENSORS
57	NDB2 series mini circuit breakers	AUTOMATION SYSTEMS INTERCONNECT INC.
58	Pressurex Zero sensor film	SENSOR PRODUCTS INC.
59	BLM02 series ferrite beads	MURATA ELECTRONICS NORTH AMERICA INC
60	AEDT-9340 six-channel encoder	AVAGO TECHNOLOGIES
61	CEG23 series isolator	MURATA ELECTRONICS NORTH AMERICA INC.
62	SpitAnll capacitor simulation software	AVX CORP.
63	PolySwitch RKEF series circuit protection devices	TYCO ELECTRONICS LTD.
64	NV-350 and NV-700 power-supply modules	LAMBDA
65	Searay Slim four-row connectors	MOLEX INC.
66	5.7-in. LQ057V3DG02 and 8.4-in. LQ084V3DG01 TFT-LCDs	SHARP MICROELECTRONICS OF THE AMERICAS
67	Camera Link cable assemblies	CICOIL CORP.
68	CS1211 ultra-miniature tactile switch	CIT RELAY & SWITCH
69	8STM circular connectors	SOURIAU USA
70	MPL-3333 3.3-V transformer	BETA TRANSFORMER TECHNOLOGY
71	RFN-1006-I-WB N-type connector	RF INDUSTRIES INC.
72	B8273x series D-core chokes	EPCOS
73	SBH series shrouded headers/mates	SULLINS ELECTRONICS CORP
74	TS-SS-11/12 and TS-SG-01/02 compression screws	IRONWOOD ELECTRONICS
75	MR190 universal manual pulse generator/handwheel	MICRONOR INC
76	LQH55P series compact power inductors	MURATA ELECTRONICS NORTH AMERICA INC.
77	DensiShield copper I/O links	FCI USA INC.
78	EFE Series front-end power supplies	TDK-LAMBDA
79	Pacesetter 2994/98 ac-motor speed controls	BODINE ELECTRIC CO.
80	1-mm PCI Express edgecard connectors	SULLINS CONNECTOR SOLUTIONS INC.
81	TMPC-500 500-W ATX power supply	TUMBLER TECHNOLOGIES + TRUMPOWER
82	iVDR storage interface connector	FCI USA INC.
83	Optran UVNS silica/silica fiber	CERAMOPTEC INDUSTRIES INC.
84	HCI power-distribution connector system	FCI USA INC.
85	SG-BGA-6252 0.8-mm pitch SDRAM socket	IRONWOOD ELECTRONICS
86	OSSR series solid-state relays	OPTEK TECHNOLOGY INC.
87	LaneLink DDR InfiniBand cable assemblies	MOLEX INC.,
88	10GHz SG-BGA-7121/22 QFN sockets	IRONWOOD ELECTRONICS
89	AYZ, JS, JSM, and PCM series slide switches	C&K COMPONENTS
90	M-FIAM9 28-V input attenuator module	VICOR CORP.
91	RQA-5010-8X right-angle QMA connector	RF INDUSTRIES INC.
92	SG-BGA-7116 processor socket	IRONWOOD ELECTRONICS
93	Z-PACK Slim UHD series board-to-board connectors	TYCO ELECTRONICS
94	780A industrial accelerometer	WILCOXON RESEARCH INC.
95	MDQ & MDY magnetic drive components	MISUMI USA INC
96	LS6D-1012A-RH dc-ac inverter	TAIYO YUDEN INC.
97	5U AdvancedTCA chassis	ELMA ELECTRONIC INC.
98	CVC038CC-3660-3700 coaxial resonant oscillator	CRYSTEK CRYSTALS CORP.
99	CHTB series connection blocks	OKW ELECTRONICS INC.
100	MINI SAC Type-A cordsets	PHOENIX CONTACT INC.
101	CB75T series dc-dc converter modules	MARTEK POWER ABBOTT INC.

mounts on a printed-circuit board (PCB) with solderless connectors. The amplifier accepts a standard  $\pm 10\text{-V}$  current command from an external controller, while other analog control inputs are available to set current limits and adjust balance.

## COLOR MY CONNECTOR WORLD

Though interconnects were the most prolific category in the top 100, only one made it into the top 10, the C-SX-069 Pathfinder 75- $\Omega$  BNC connector from Cambridge Electronic Industries Ltd. for HDTV-broadcast applications (*Fig. 9*). Its popularity with readers may be due to the fact that the connector integrates a unique light-pipe feature that eases port identification.

The construction and insulator material provide the necessary signal characteristics, while its light-pipe capability transmits light, typically from a PCB-mount LED, from the back of the connector to the front. Using different colors, the function and status of each port are clearly visible. Adding self-monitoring circuitry makes it possible to also indicate failures. The right-angle BNC connector is 4 mm tall and fully complies with RoHS and 3G SDI.

## SENSORS CATCH COLD

Landing in eighth on our list is the first in-flight ice sensor made entirely of plastic, the Model 9732-UAV from New Avionics. This ice-detecting transducer probe reportedly solves the problem of conductive metallic interference with mission-critical radio antennas on unmanned aerial vehicles, as the sensor is transparent to radio frequencies (*Fig. 10*).

Its body consists of Delrin and Acrylic plastics. The only metal in the sensor assembly is in the wires that connect it to a host system. The component installs virtually anywhere on an aircraft fuselage, at any angle of attack, raked forward or aft, and with any orientation of the sensor air gap. The only requirement is that the air gap positions beyond the airflow boundary layer. The sensor measures 1.5 in. long and 0.25 in. in diameter, weighs less than 10 g, and features what may be the industry's most sensitive ice detection threshold of 0.001 in. of ice or better. 

SENSORS & TRANSDUCERS		
Rank	Product	Company
1	Model 9732-UAV ice detecting transducer probe	NEW AVIONICS CORP
2	AST20HA digitally compensated pressure transducer	AMERICAN SENSOR TECHNOLOGIES INC.
3	iPedal brake-testing sensor	LOADSTAR SENSORS INC.
4	MS5536 pressure sensor	SERVOFLO CORP.
5	RSE 1500 series rotary RVDT position sensors	MACRO SENSORS
6	SFH7740 and SFH7741 SMT proximity sensors	OSRAM OPTO SEMICONDUCTORS
7	Alpha Instruments pressure sensors	SERVOFLO CORP.
8	LP 750 series frictionless position sensors	MACRO SENSORS
9	Pressurex Zero sensor film	SENSOR PRODUCTS INC.
10	780A industrial accelerometer	WILCOXON RESEARCH INC.

**Power**

**Liquid**

**Cooled**



Production units are shipped with metal copper pipe cover

**20kW to 30kW Power Supply, 2U x 19" Package, 365VAC to 600VAC,  
3 $\phi$ , Pluggable and Power Factor Corrected, 92% Efficiency at 80% Load  
Standard Liquid Inlet Temperature is 35°C, 60°C is available  
42 to 360 VDC, Ambient Temperature 0°C to + 50°C**



Call the Power Guys: PARAM, GREG OR ARVIN

TEL: (310) 829-6751 FAX: (310) 453-3929 EMAIL: [Sales@PioneerMagnetics.com](mailto:Sales@PioneerMagnetics.com)

1745 Berkeley Street, Santa Monica, CA 90404 USA

TOLL FREE: (800) 269-6426 [www.PioneerMagnetics.com](http://www.PioneerMagnetics.com)